Michigan Department of Community Health

MDCH

Rick Snyder, Governor
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ANNUAL REVIEW OF HIV TRENDS IN MICHIGAN (2008 - 2012)

Bureau of Disease Control, Prevention and Epidemiology
HIV/STD/VH/TB Epidemiology Section, April 2014

Overall trends in new Michigan HIV diagnoses

METHODS. To evaluate trends in new HIV diagnoses in Michigan over time, we estimated the number of persons newly diagnosed with HIV infection between 2008 and 2012 by adjusting the number of reported cases to account for those who may not have been reported to the health department by January 1, 2014. These adjustments were made by weighting the data.

Unless otherwise noted, numbers cited include persons living with all stages of HIV infection*. We used regression modeling on the adjusted data to assess significant changes in annual rates of new diagnoses overall and by race, sex, and age. Rates for race and sex subgroups were calculated using intercensal annual population estimates released by the Census Bureau in 2012 and based on the 2010 Census, the most recent year for which 2008-2010 data were available. Rates for age at diagnosis were calculated using the 2012 Bridged-Race Population Estimates produced by the Population Estimates Program of the U.S. Census Bureau in collaboration with the National Center for Health Statistics. For risk groups, we analyzed annual counts since there are no reliable denominator data available for rate calculation. Trends overall and in subgroups are described using *average annual percent changes* in rates (or counts) of new diagnoses. Only significant trends and their corresponding percent changes are shown. "Significant" indicates statistical significance assessed at *p*<0.05.

For concurrent diagnoses, defined as progression to stage 3 HIV infection within 30 days of HIV diagnosis, we used the Chi Square Mantel-Haenszel test for trend to assess changes over time. This test allows us to assess increases and decreases in the *proportion* of new diagnoses that are concurrent for a particular race/sex combination.

The date of new HIV *diagnosis* does not tell us when persons were first *infected*, because HIV diagnosis may take place months or years after infection. In 2005, MDCH began incidence surveillance, which estimates new *infections* rather than new *diagnoses* using the Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS). Last year, we released estimated rates of recent infections for 2006-2010. Updated data for 2007-2011 will also be released this year. All STARHS Incidence reports are available on our website.

Figure 1. Number and rate of new HIV diagnoses in Michigan, 2008—2012
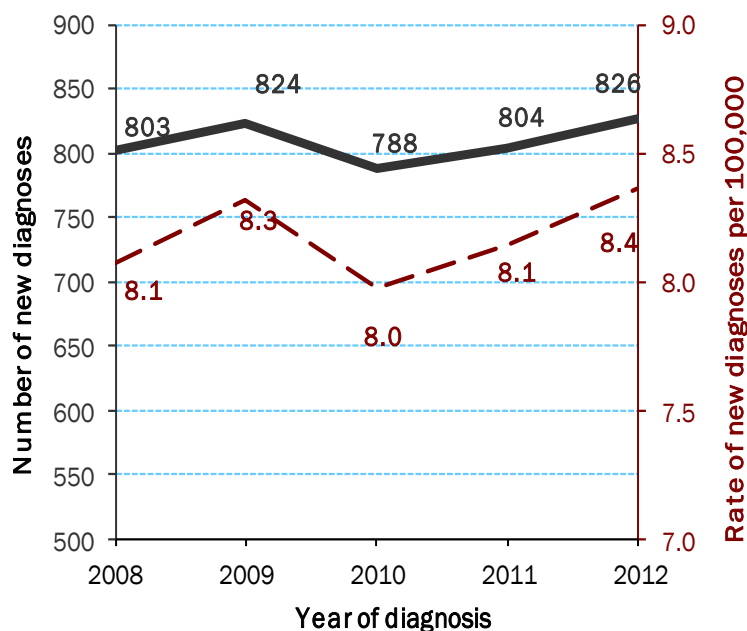
KEY FINDINGS

- Rates of new diagnoses in Michigan remained stable overall.
- Increases were noted among 20-24 year olds;
- The highest rates of new HIV diagnoses occurred among Men who have sex with men (MSM)
- Concurrent diagnoses remained stable overall.
- Rates of new diagnoses remained stable among persons living in SE MI and in Out-state Michigan.

*Michigan discontinued use of the term 'AIDS' in January 2012 in accordance with the language in the 2008 HIV Case Definition released by the CDC. HIV infection is now classified by stage of disease, with stage 3 representing AIDS.

OVERVIEW OF TRENDS. Figure 1 shows the number and rate of new HIV diagnoses in Michigan by year for 2008 to 2012. The number and rate of new HIV diagnoses in Michigan remained stable during this time period for the fourth consecutive trend report. There was an average of 809 new cases per year and an average rate of 8.2 cases per 100,000 population.

Each year, there are more new diagnoses of HIV infection than deaths. As a result, the reported number of persons living with HIV in Michigan is increasing. MDCH estimates that 19,800 persons were living with HIV infection in Michigan as of January 2013.

New HIV diagnoses by age at diagnosis

The rate of new HIV diagnoses increased significantly among persons 20-24 years of age (an average 9% per year) . There were no significant changes in the rate of new HIV diagnoses among any other age groups from 2008 to 2012 (table 1).

This is the third trend report in seven reports that did not show significant increases in new diagnoses among 13-19 year olds. This is the fourth consecutive report, however, showing increases among 20-24 year olds. Almost three quarters of teen and young adult cases combined are residents of Southeast (SE) Michigan. Of these cases, 61% were residents of the City of Detroit at the time of HIV diagnosis.

Though the last two trend reports showed decreases in rates among 40-44 year olds, rates have remained stable between 2008 and 2012. Before 2005, 35-39 year olds represented one of the highest rates of HIV diagnoses of all age groups. This group now represents the fourth highest rate, with the rates among 20-24, 25-29, and 30-34 year olds surpassing this group. These trends represent a continued shift in the epidemic to younger adults and highlight the large gap between rates among younger persons and older persons.

Of all teens diagnosed in the last five years, 82% are black compared to 59% of persons diagnosed at older ages. Furthermore, teens are much more likely to be black males who have sex with males (MSM) compared to adults 20 years and older (62% vs. 29%, respectively) (figure 2). This underscores a continued need for prevention campaigns tailored to young black MSM, as the rates in this group will likely widen the already large racial gap among persons living with HIV.

Table 1.‡ New HIV diagnoses by age at diagnosis, 2008-2012

Age at diagnosis	2008			2009			2010			2011			2012		
	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate
0 - 12 yrs	6	1%	0.4	6	1%	0.4	4	1%	0.2	9	1%	0.6	3	<1%	0.2
13 -19 yrs	81	10%	7.7	76	9%	7.4	55	7%	5.5	69	9%	7.0	62	7%	6.4
20 -24 yrs	130	16%	19.6	149	18%	22.4	149	19%	22.2	182	23%	26.2	201	24%	28.2 ⬆9%
25 -29 yrs	120	15%	19.8	124	15%	20.9	124	16%	21.0	119	15%	20.2	138	17%	23.5
30 -34 yrs	87	11%	15.1	88	11%	15.4	102	13%	17.6	89	11%	15.3	91	11%	15.5
35 -39 yrs	101	13%	15.4	91	11%	14.4	86	11%	14.1	76	9%	13.1	76	9%	13.4
40 -44 yrs	90	11%	12.9	90	11%	13.4	73	9%	10.9	69	9%	10.4	80	10%	12.2
45 -49 yrs	76	9%	9.9	69	8%	9.2	82	10%	11.0	81	10%	11.3	66	8%	9.4
50 -54 yrs	49	6%	6.5	67	8%	8.8	59	8%	7.8	54	7%	7.0	55	7%	7.2
55 -59 yrs	31	4%	4.7	39	5%	5.8	28	4%	4.1	26	3%	3.8	30	4%	4.2
60 and over	31	4%	1.7	22	3%	1.2	27	3%	1.4	30	4%	1.5	25	3%	1.2
Total	803	100%	8.1	824	100%	8.3	788	100%	8.0	804	100%	8.1	826	100%	8.4

‡TABLE FOOTNOTES:

- The number of new diagnoses shown are not reported case counts. These are estimates based on the number of reported cases that are adjusted to account for reporting delay. As a result, summed counts will not always match the column total shown due to rounding error.
- Bold/Colored text indicates that statistically significant trends occurred in that group. The arrow indicates the direction of change in rates over the 5-year period, while the percentage is the *average change per year* in the rates, as calculated using regression modeling.
- Rates are per 100,000 population.

Figure 2. MSM vs. non-MSM risk by race and age at HIV diagnosis, 2008-2012
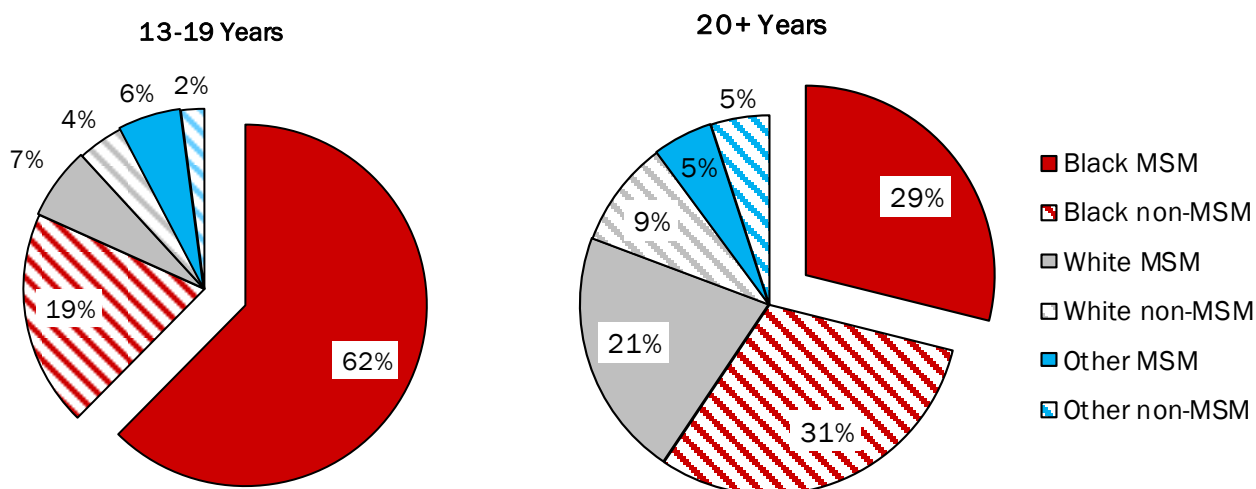
New HIV diagnoses by race/sex

For the first report since we began analyzing HIV trends in 2001, there were no significant changes in the rate of new HIV diagnoses for any race/sex group. The rate of new diagnoses remained highest among black persons of both sexes compared to all other race/sex groups. In 2012, the rate among black males was almost 11 times that of white males, and the rate among black females was 20 times that of white females. These disparities have persisted since we began analyzing HIV trends in MI in 2001, and although decreases in new diagnoses among black females have narrowed the rate difference between black and white females, the gap between black and white males seems to have remained relatively stable in recent years.

Table 2.‡ New HIV diagnoses by race/sex, 2008-2012

Race/Sex	2008			2009			2010			2011			2012		
	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate
Male	628	78%	12.9	660	80%	13.6	635	81%	13.1	639	79%	13.2	674	82%	13.9
Black	385	48%	58.0	395	48%	59.8	359	46%	54.5	376	47%	57.1	392	47%	59.6
White	182	23%	4.8	211	26%	5.6	217	28%	5.8	195	24%	5.2	208	25%	5.6
Other	60	7%	13.6	54	7%	12.1	58	7%	12.8	68	8%	14.5	74	9%	15.4
Female	175	22%	3.5	164	20%	3.2	153	19%	3.0	165	21%	3.3	152	18%	3.0
Black	117	15%	15.9	128	15%	17.5	114	14%	15.6	111	14%	15.3	105	13%	14.4
White	41	5%	1.1	19	2%	0.5	23	3%	0.6	29	4%	0.8	30	4%	0.8
Other	17	2%	3.8	17	2%	3.8	16	2%	3.5	24	3%	5.1	17	2%	3.6
All	803	100%	8.1	824	100%	8.3	788	100%	8.0	804	100%	8.1	826	100%	8.4
Black	503	63%	35.9	522	63%	37.6	473	60%	34.1	488	61%	35.1	497	60%	35.8
White	223	28%	2.9	230	28%	3.0	241	31%	3.2	225	28%	3.0	238	29%	3.2
Other	77	10%	8.7	71	9%	7.9	75	9%	8.1	92	11%	9.8	91	11%	9.5

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- Bold/Colored text indicates that statistically significant trends occurred in that group. The arrow indicates the direction of change in rates over the 5-year period, while the percentage is the *average change per year* in the rates, as calculated using regression modeling.
- Rates are per 100,000 population.

New HIV diagnoses by risk

Between 2008 and 2012, the number of newly diagnosed persons did not increase or decrease significantly for any risk transmission group. There was no decrease among IDU for the first time since we began analyzing trends in 2001. Data from Michigan's HIV Behavioral Surveillance (collected in 2009) suggest reductions among IDUs may be partly attributable to the success of harm reduction programs, such as needle exchanges. This is also the first trend report not to reflect decreases among heterosexuals in the past five reports.

The "other known" risk category includes perinatal and blood product transmission. The numbers have been low in this group for many years owing to programmatic successes in preventing perinatal and blood-borne transmissions.

New diagnoses among persons with no identified risk (NIR) remained stable between 2008 and 2012. Though stable, there is a targeted effort to reduce the number of new diagnoses with NIR. Risk information is important information for prevention efforts; thus, it is crucial that risk questions be answered on the adult case report form (ACRF).

Table 3.‡ New HIV diagnoses by risk, 2008-2012

Risk	2008		2009		2010		2011		2012	
	Num	%	Num	%	Num	%	Num	%	Num	%
MSM	415	52%	448	54%	440	56%	447	56%	470	57%
IDU	36	4%	26	3%	35	4%	28	4%	28	3%
MSM/IDU	20	2%	14	2%	7	1%	13	2%	12	1%
Heterosexual	149	19%	156	19%	138	17%	136	17%	127	15%
Other known	4	<1%	3	<1%	4	1%	9	1%	3	<1%
No identified risk	178	22%	177	21%	164	21%	171	21%	186	22%
Total	803	100%	824	100%	788	100%	804	100%	826	100%

‡TABLE FOOTNOTES:

- The number of new diagnoses shown are not reported case counts. These are estimates based on the number of reported cases that are adjusted to account for reporting delay. As a result, summed counts will not always match the column total shown due to rounding error.
- **Bold/Colored text** indicates that statistically significant trends occurred in that group. The arrow indicates the direction of change in number of new diagnoses over the 5-year period, while the percentage is the *average change per year* in the the number of new diagnoses, as calculated using regression modeling.
- The heterosexual category includes males whose female sexual partners are known to be HIV-infected or at high risk for HIV and females who reported sex with males regardless of what is known about their partners' HIV status or risk. The NIR category includes males who reported sex with females of unknown risk/HIV status as their only risk and males and females for whom no risk has yet been reported.

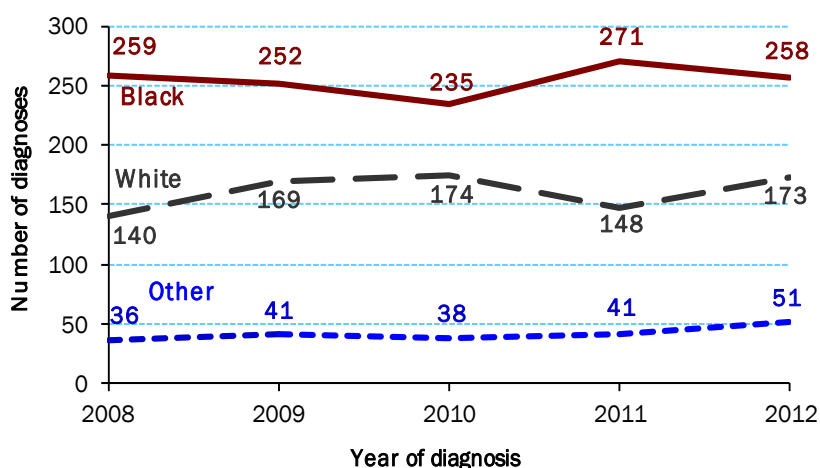Figure 3. Race among MSM, 2008-2012

Figure 3 illustrates trends among MSM by race. MSM were more than half of all new diagnoses between 2008 and 2012 (55%). Of these newly diagnosed MSM, 57% are black. There were no significant increases or decreases in new diagnoses among MSM of any race between 2008 and 2012, but black males continue to make up the largest proportion of all MSM HIV cases in Michigan.

Concurrent diagnoses

The proportion of persons diagnosed with stage 3 HIV infection within 30 days of diagnosis (concurrent diagnoses) remained relatively stable between 2008 and 2012 (table 4). There were no significant changes in the proportion of concurrent diagnoses among males or among females overall. Men however, had a significantly higher proportion of concurrent diagnoses than women, and persons of black race had significantly fewer concurrent diagnoses than persons of all other races (18% vs. 24%, respectively). Many concurrent diagnoses represent a failure to diagnose HIV

(Continued from page 4)

Concurrent diagnoses (cont.)

early in the course of the infection and/or a failure to initiate early treatment. Persons who are unaware of their HIV infection cannot benefit from early antiretroviral therapy and have a poorer prognosis than those diagnosed earlier in the disease course. They are also not accessible for primary prevention (transmission to uninfected individuals). Expanding routine HIV testing in medical settings and provision of HIV testing at community-based and outreach settings will promote and facilitate access to HIV testing, which may improve health outcomes for those who are infected.

Table 4.‡ Concurrent HIV diagnoses by race/sex, 2008-2012

Race/Sex	2008 Num	%	2009 Num	%	2010 Num	%	2011 Num	%	2012 Num	%	Total Num	%
Male	145	23%	131	20%	149	24%	119	19%	136	20%	681	21%
Black	71	18%	71	18%	76	21%	59	16%	66	17%	342	18%
White	55	30%	47	22%	61	28%	54	27%	53	26%	270	27%
Other	19	32%	13	24%	13	22%	7	10%	16	22%	69	22%
Female	32	18%	26	16%	24	16%	34	21%	27	18%	144	18%
Black	25	21%	22	17%	19	17%	21	19%	21	20%	108	19%
White	4	10%	4	21%	3	13%	5	17%	2	7%	18	13%
Other	3	18%	0	0%	2	13%	8	33%	4	23%	17	19%
All	177	22%	157	19%	174	22%	154	19%	163	20%	824	20%
Black	96	19%	93	18%	95	20%	80	16%	86	17%	450	18%
White	59	26%	51	22%	64	26%	59	26%	56	23%	288	25%
Other	22	29%	13	18%	15	20%	15	16%	21	22%	86	21%

‡TABLE FOOTNOTES:

• The number of new diagnoses shown are not reported case counts. These are estimates based on the number of reported cases that are adjusted to account for reporting delay. As a result, summed counts will not always match the column total shown due to rounding error.

• Percentages reflect the number of concurrent diagnoses for a race/sex/year combination divided by the total diagnoses for that race/sex/year combination.

• Bold/Colored text indicates that statistically significant trends occurred in that group. Significance was assessed using the Mantel-Haenszel chi-square test. The arrow indicates the direction of change while the accompanying percentage is the *change in proportion of concurrent diagnoses* from 2007 to 2011, which do not take into account the fluctuations from year to year.

New HIV diagnoses by residence at diagnosis

The rate of new HIV diagnoses remained relatively stable in Southeast Michigan (Lapeer, Macomb, Monroe, Oakland, St. Clair, and Wayne counties), as well as the rest of the state between 2008 and 2012 (table 5). It is also important to note that the burden of new diagnoses continues to disproportionately affect SE MI.

Table 5.‡ New HIV diagnoses by residence at diagnosis, 2008-2012

Residence	2008 Num	%	Rate	2009 Num	%	Rate	2010 Num	%	Rate	2011 Num	%	Rate	2012 Num	%	Rate
SE Michigan	549	70%	12.7	562	69%	13.1	547	70%	12.8	543	68%	12.8	572	69%	13.4
Out-state	233	30%	4.5	247	31%	4.4	235	30%	4.2	253	32%	4.5	251	31%	4.5
Prison or Unknown	21	3%	N/A	15	2%	N/A	7	1%	N/A	8	1%	N/A	3	0%	N/A
Total*	782	100%	8.1	809	100%	8.3	781	100%	8.0	796	100%	8.1	823	100%	8.4

‡TABLE FOOTNOTES:

• The number of new diagnoses shown are not reported case counts. These are estimates based on the number of reported cases that are adjusted to account for reporting delay. As a result, summed counts will not always match the column total shown due to rounding error.

• Rates are per 100,000 population.

Summary

- The number and rate of new HIV diagnoses in Michigan remained stable between 2008 and 2012 for the 4th consecutive trend report, with an average of 809 new cases per year and an average rate of 8.2.

- The highest rates of new HIV diagnoses occurred among:
  - 20 - 24 and 25-29 year olds
  - Black males and females
  - Men who have sex with men (MSM)*
  - Southeast Michigan residents

- INCREASES in rates occurred among:
  - 20 - 24 year olds (4th consecutive trend report)

- No DECREASES in rates occurred.

- Very few significant changes were found among the various subgroups analyzed, suggesting that new diagnoses overall are becoming increasingly stable each year.

- Almost three quarters of Michigan's new cases among 13 - 24 year olds were residents of SE Michigan at diagnosis. Of these SE MI young adults, 61% lived in the City of Detroit.

- 82% of new 13 - 19 year old cases are black (of whom 74% are MSM), whereas 59% of those aged 20 and older are black. This finding suggests that black teens and young adults in general, and young black MSM in particular, should continue to be the focus of aggressive prevention activities.

- This is the second report in several reports to not show broad decreases in concurrent diagnoses among multiple race/sex subgroups, suggesting that the effect of improved early case detection may be continually slowing.

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*Annual counts were analyzed for risk groups since there are no reliable denominator data available for rate calculation.

For more information:

Michigan Department of Community Health
HIV/AIDS Surveillance Program
(248) 424-7910
(517) 335-8165
(**www.michigan.gov/hivstd** —> HIV/AIDS —> Statistics and Reports)
State of Michigan HIV/AIDS Statistics and Reports

Michigan Department of Community Health
HIV/AIDS Prevention and Intervention Services
(517) 241-5900
(**www.michigan.gov/hivstd** —> HIV/AIDS —> Prevention and Care)
State of Michigan HIV/AIDS Programmatic Information

MI Counseling, Testing, & Referral Sites
http://www.aidspartnership.org/index.php/testing-and-locations/

Michigan AIDS Hotline
1-800-872-2437

Centers for Disease Control & Prevention
http://www.cdc.gov/hiv
CDC HIV/AIDS Resources

AIDSInfo
http://www.aidsinfo.nih.gov/
HIV/AIDS Treatment and Clinical Trial Resources

CDC National Statistics & Surveillance
http://www.cdc.gov/hiv/topics/surveillance/index.htm
CDC HIV/AIDS Statistics and Reports

World Health Organization
http://www.who.int/topics/hiv_infections/en/
HIV/AIDS Global Resources